FIGURE 1

PRIOR ART

20

21

22

Prior Art
Figure 2a

21

20
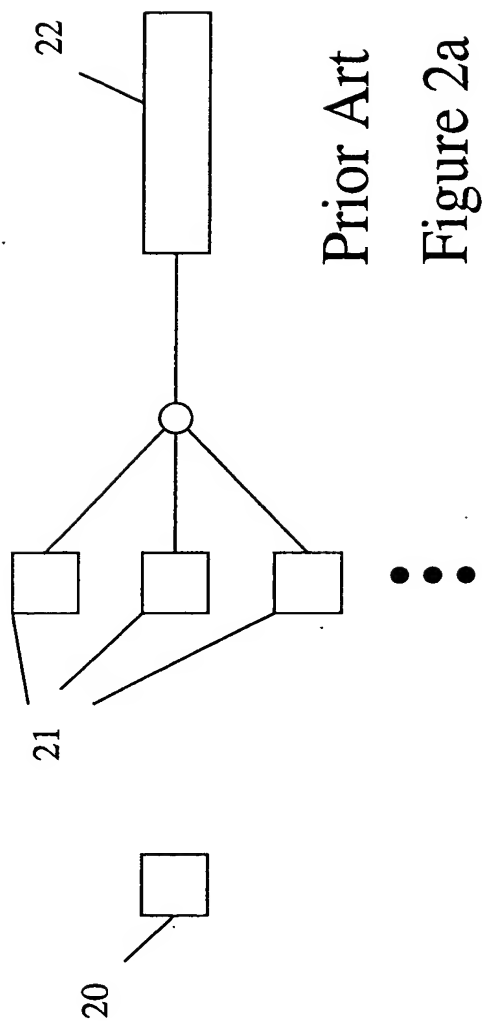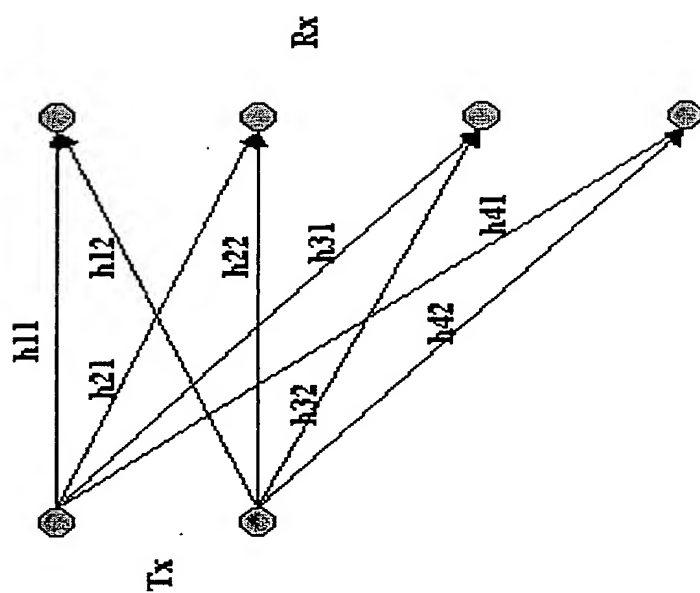
Figure 2b

MIMO configuration with 2 Node B antennas and 4 UE antennas

Figure 3

41 ——— Max Eig, best 2 from 4
42 ——— Min Eig, best 2 from 4
43 – · – · 2:2 (standard), max Eig
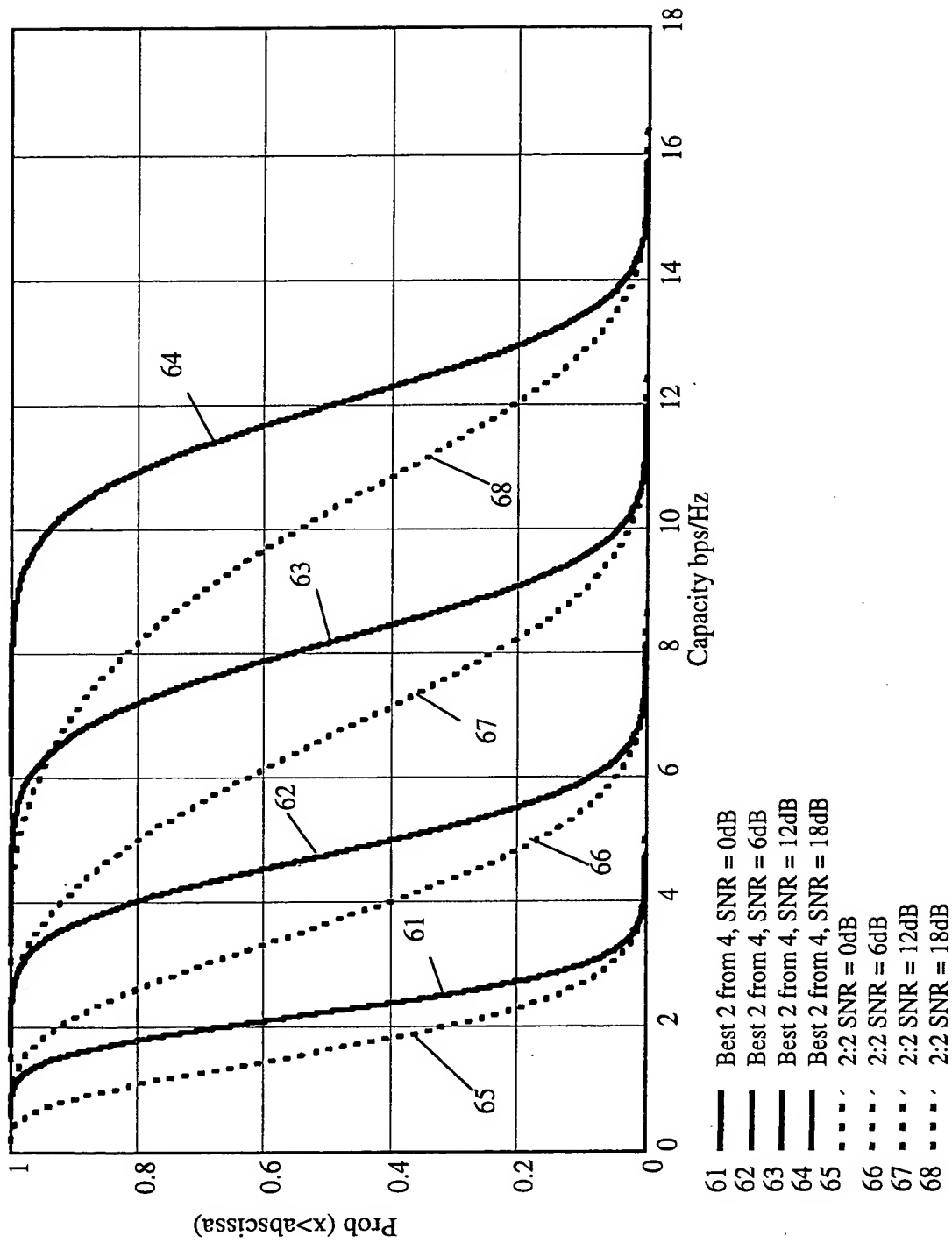44 – · · – · 2:2 standard, Min Eig
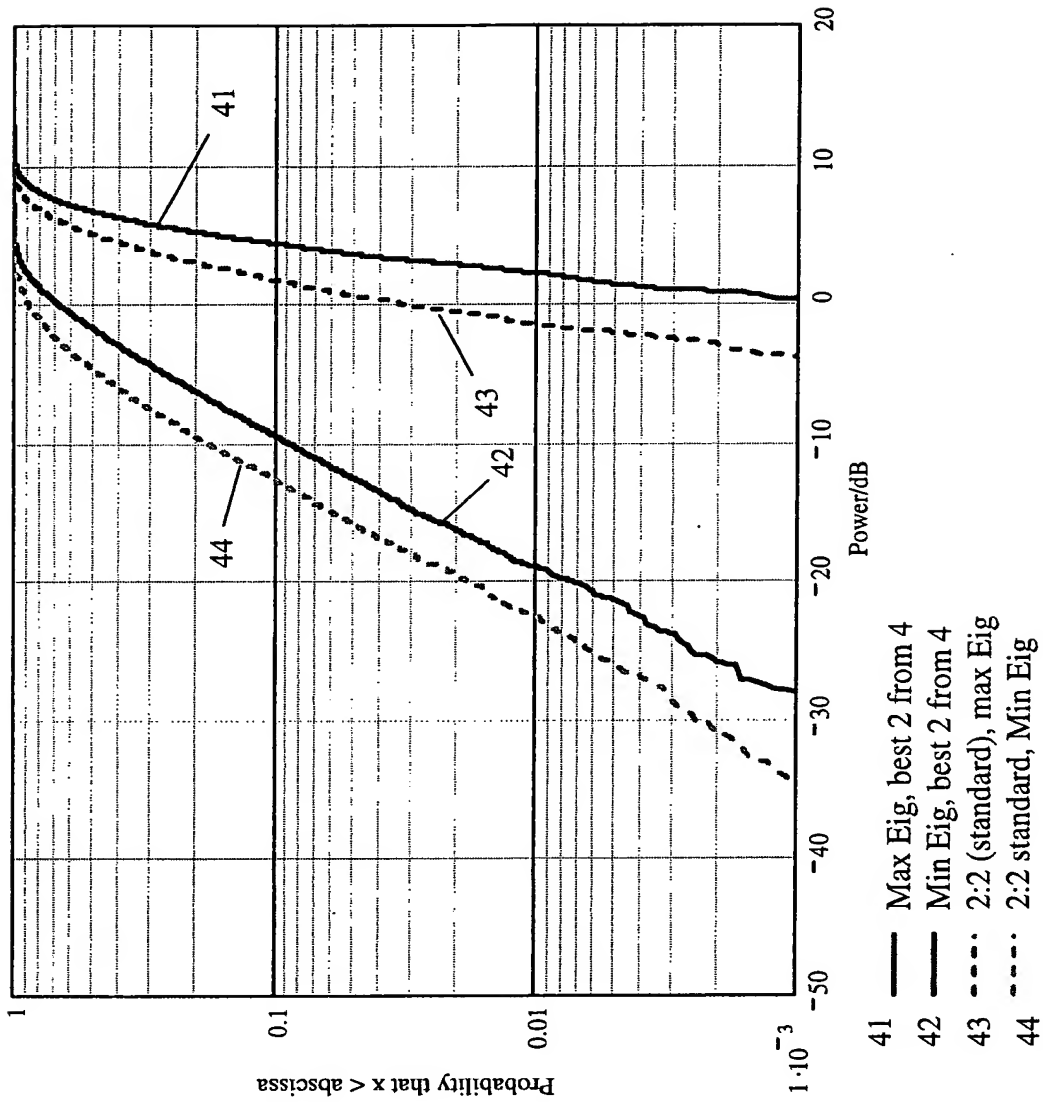
Comparison of eigenvalues for standard 2:2 MIMO and eigenvalue selection diversity (best 2 from 4) using the maximum sum of eigenvalues as the selection metric.

Figure 4
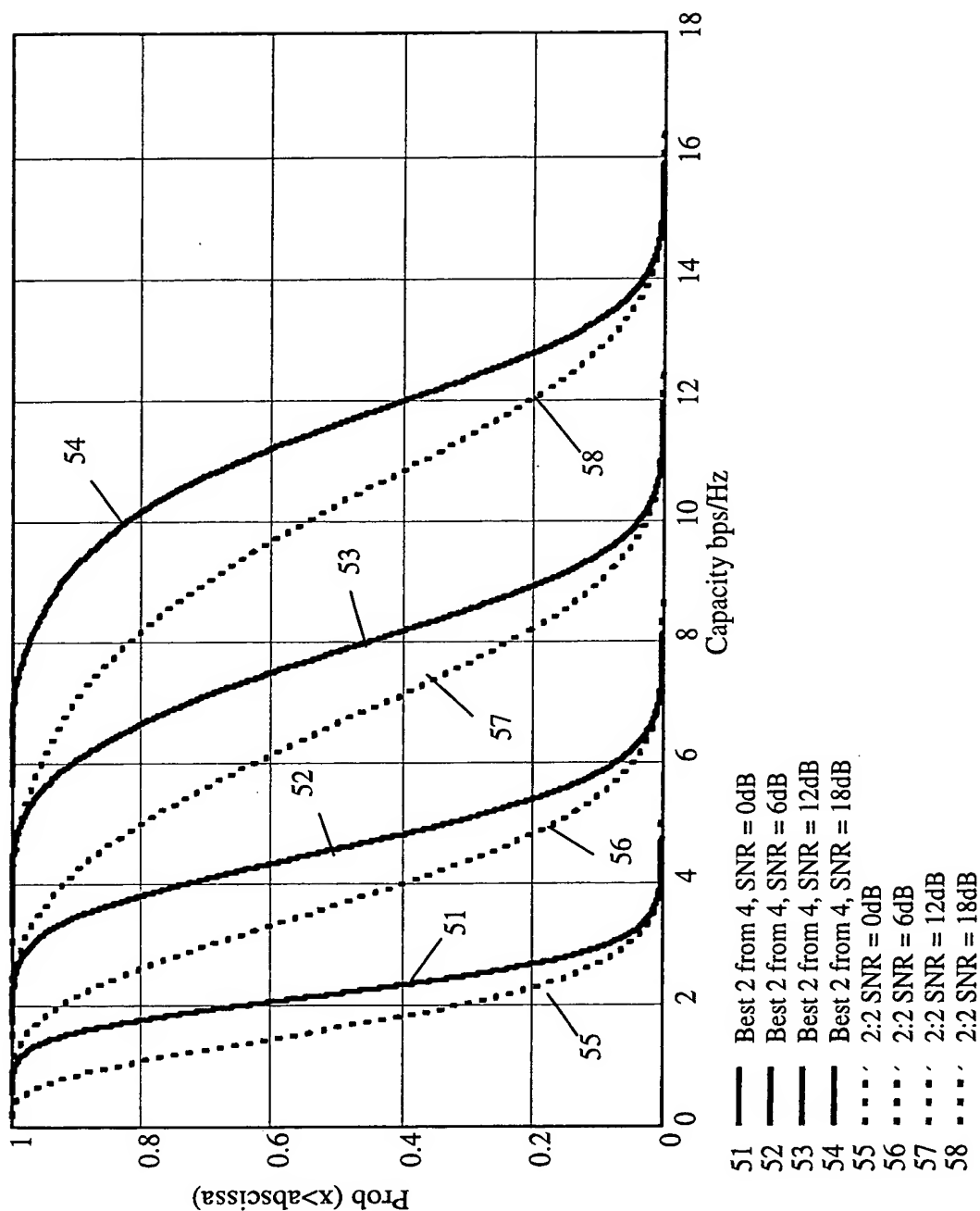
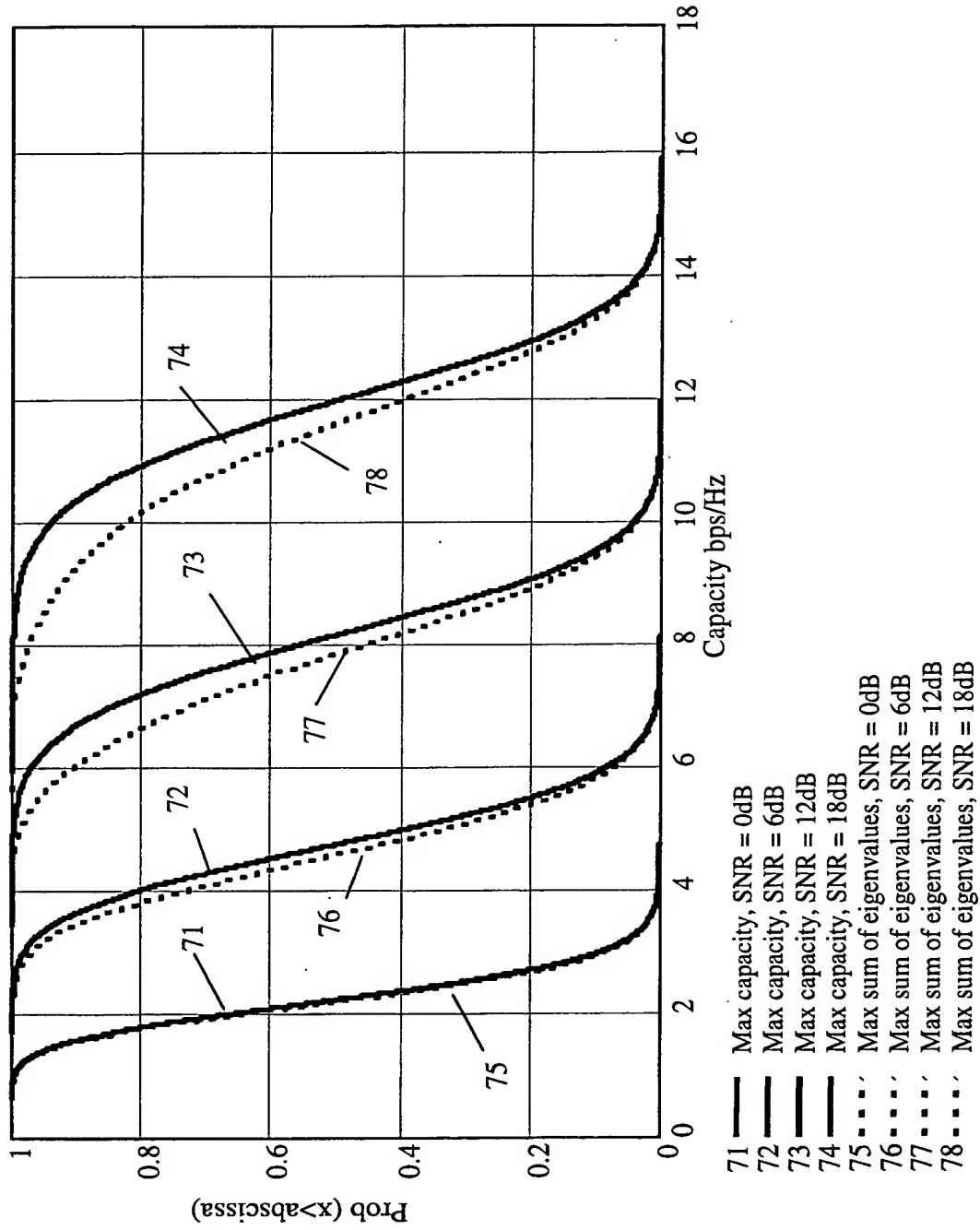| 51 | ——— | Best 2 from 4, SNR = 0dB |
52	———	Best 2 from 4, SNR = 6dB
53	———	Best 2 from 4, SNR = 12dB
54	———	Best 2 from 4, SNR = 18dB
55	······	2:2 SNR = 0dB
56	······	2:2 SNR = 6dB
57	······	2:2 SNR = 12dB
58	······	2:2 SNR = 18dB

Comarison of capacity distributions for standard 2:2 MIMO and eigenvalue selection diversity (best 2 from 4) using the maximum sum of eigenvalues as the selection metric.
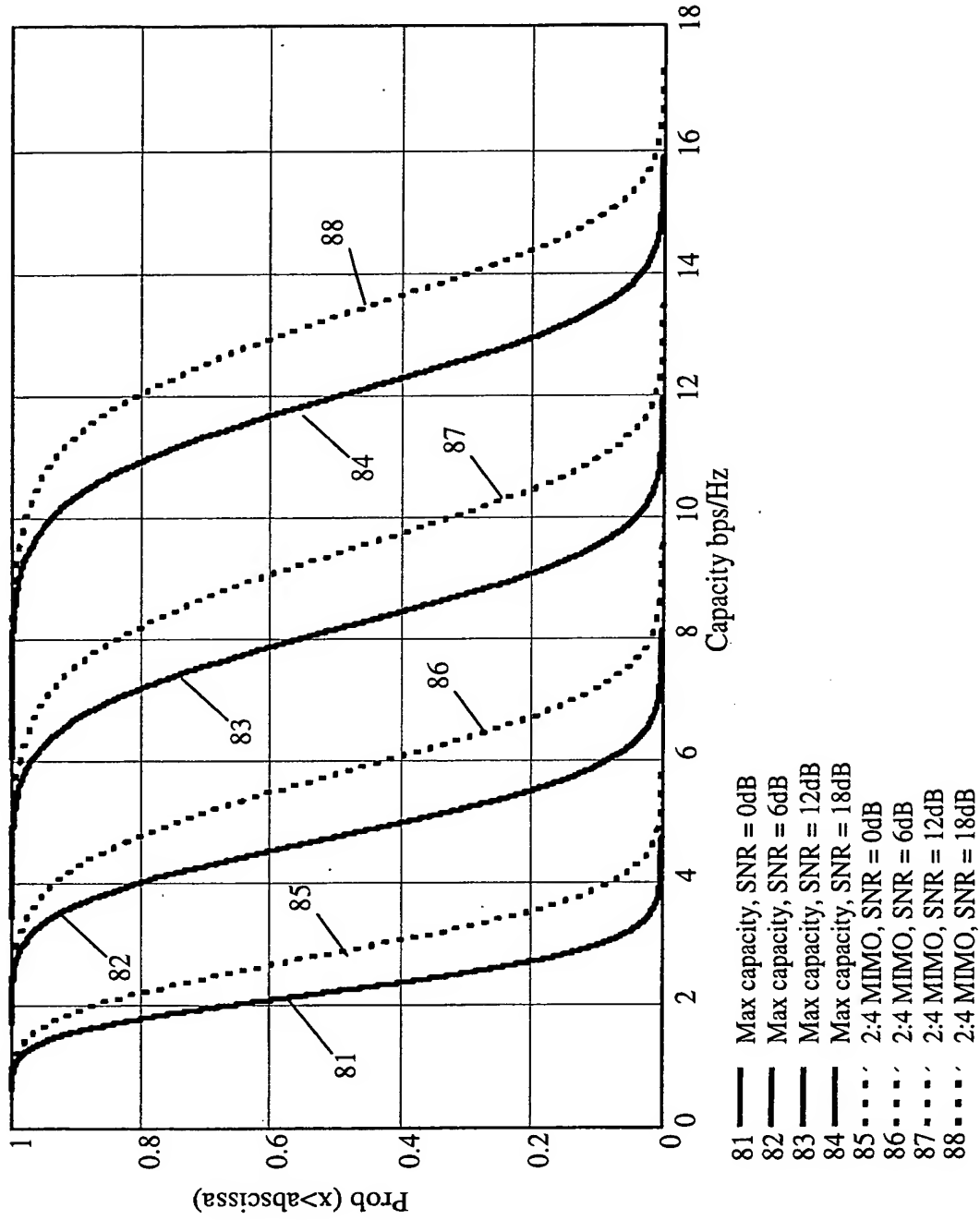
Figure 5

Comparison of capacity distributions for standard 2:2 MIMO and eigenvalue selection diversity (best 2 from 4) using the maximum instantaneous link capacity as the selection metric.

Figure 6

71 — Max capacity, SNR = 0dB
72 — Max capacity, SNR = 6dB
73 — Max capacity, SNR = 12dB
74 — Max capacity, SNR = 18dB
75 ··· Max sum of eigenvalues, SNR = 0dB
76 ··· Max sum of eigenvalues, SNR = 6dB
77 ··· Max sum of eigenvalues, SNR = 12dB
78 ··· Max sum of eigenvalues, SNR = 18dB

Comparison of capacity distributions for the two eigenvalue selection diversity schemes

Figure 7

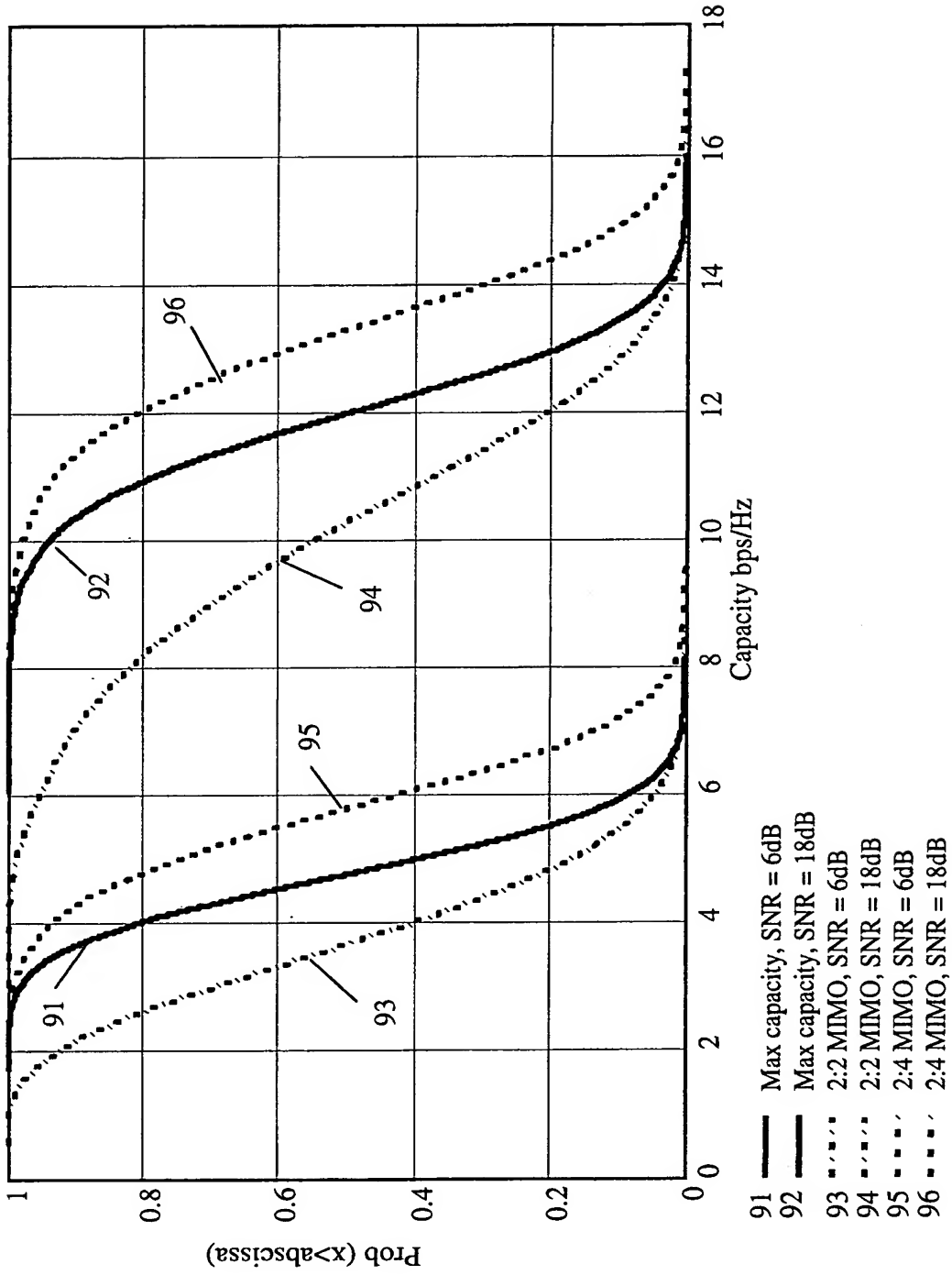| 81 | —— | Max capacity, SNR = 0dB |
82	——	Max capacity, SNR = 6dB
83	——	Max capacity, SNR = 12dB
84	——	Max capacity, SNR = 18dB
85	····	2:4 MIMO, SNR = 0dB
86	····	2:4 MIMO, SNR = 6dB
87	····	2:4 MIMO, SNR = 12dB
88	····	2:4 MIMO, SNR = 18dB

Comparison of 'maximum capacity' eigenvalue selection diversity and standard 2:4 MIMO capacity distributions.

Figure 8

Comparison of maximum capacity eigenvalue selection diversity with 2:2 and 2:4 MIMO capacity curves
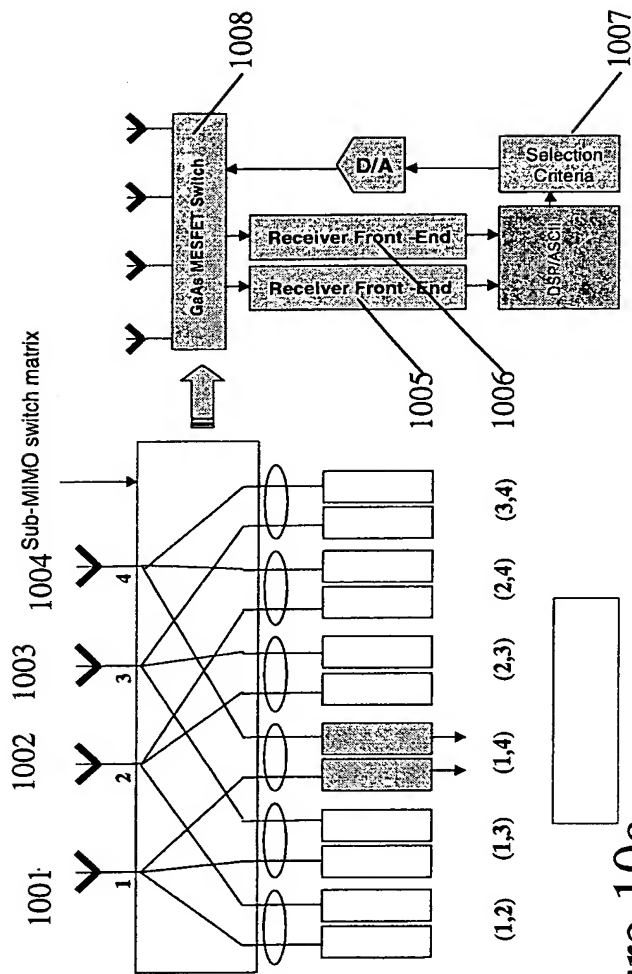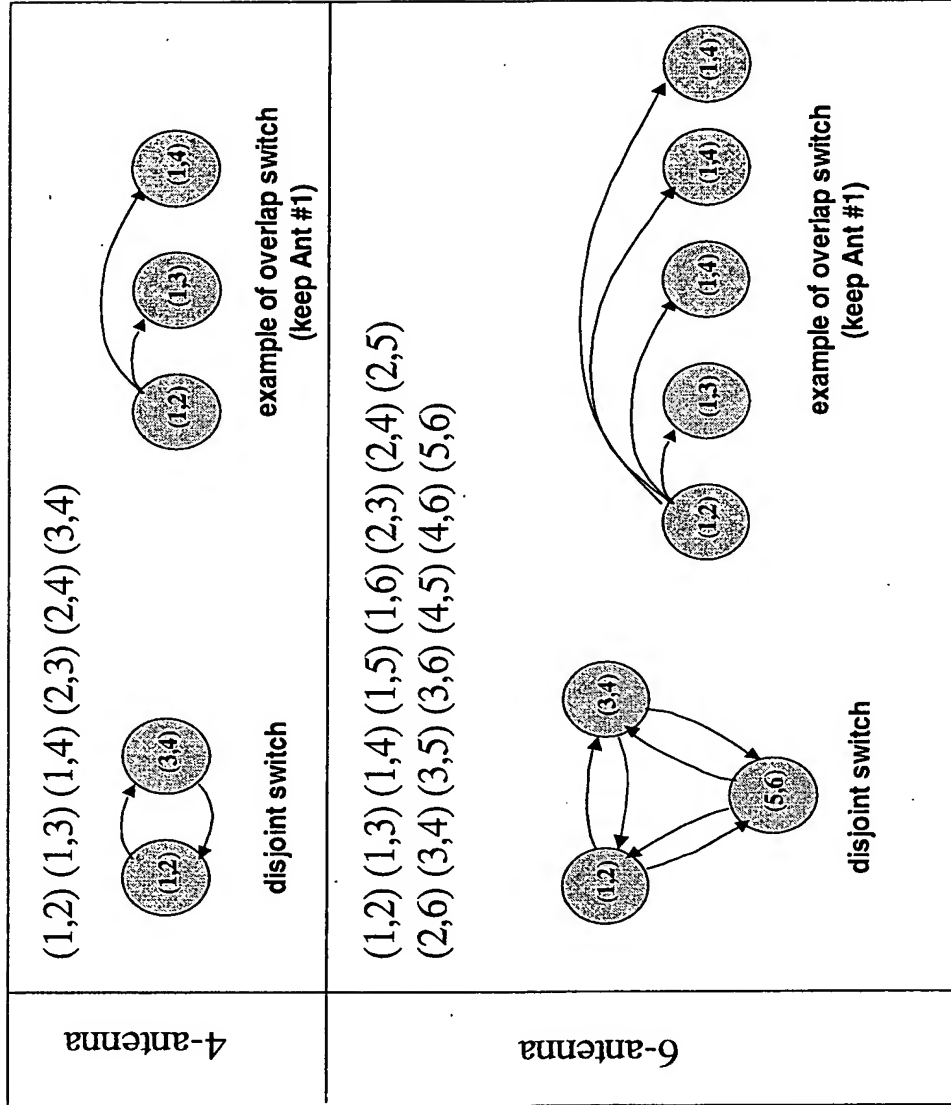
Figure 9

Figure 10a

Figure 10b

Figure 10c
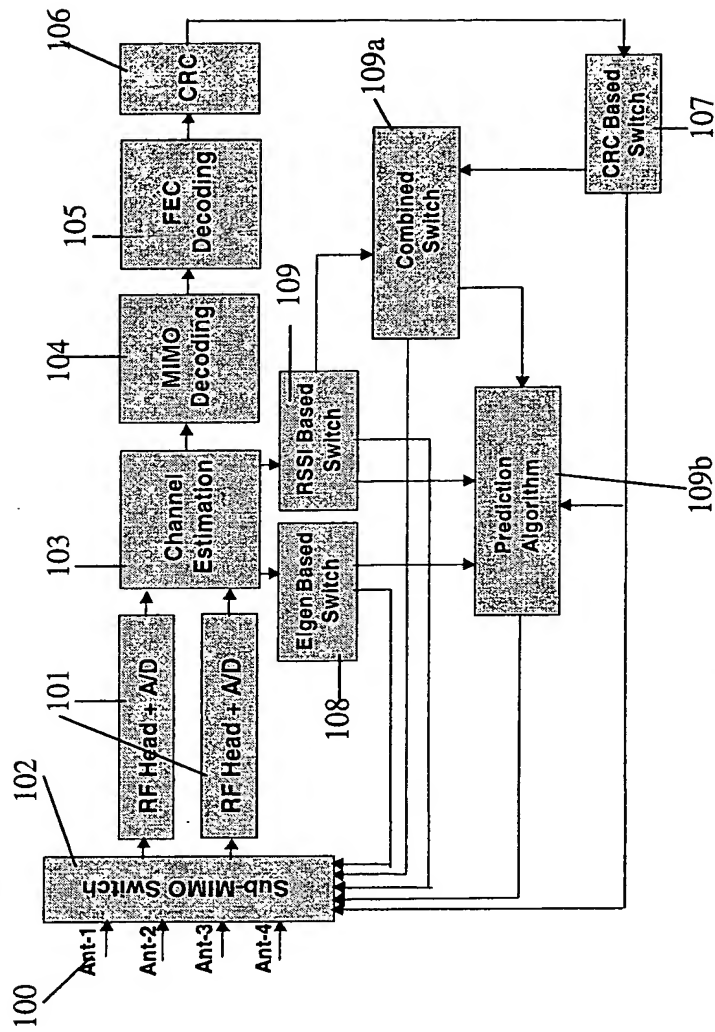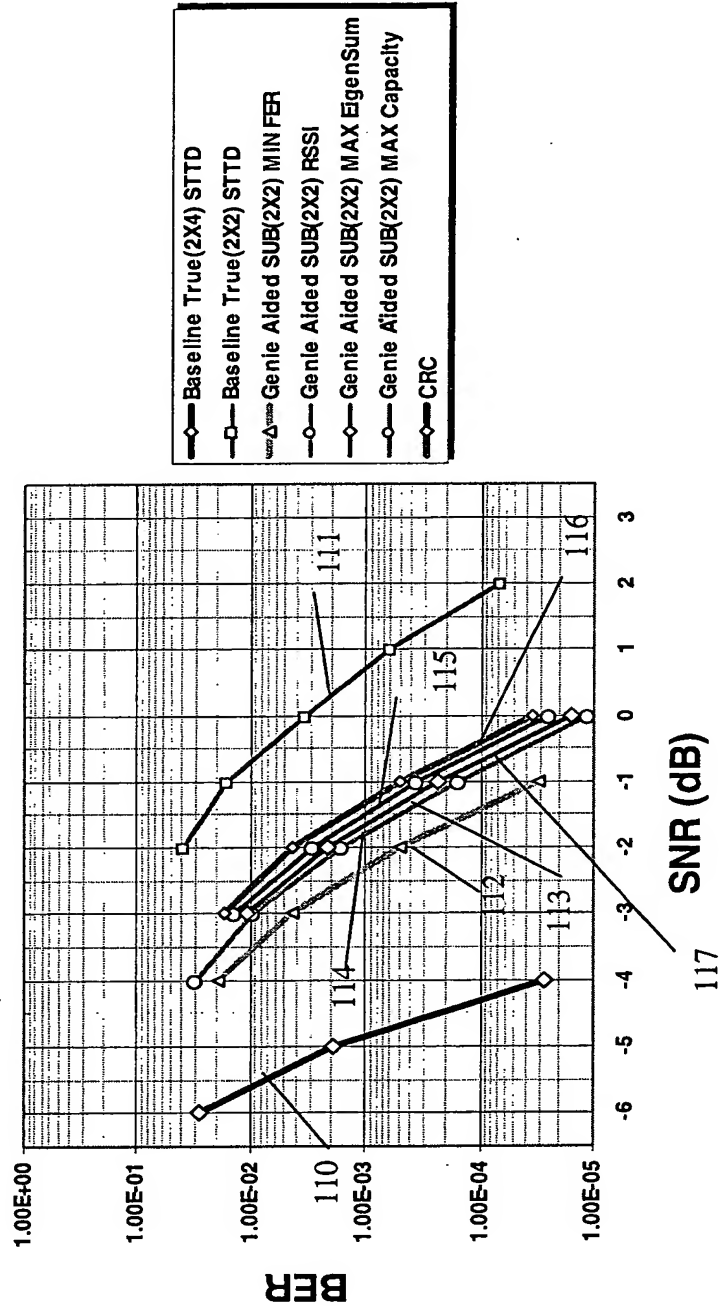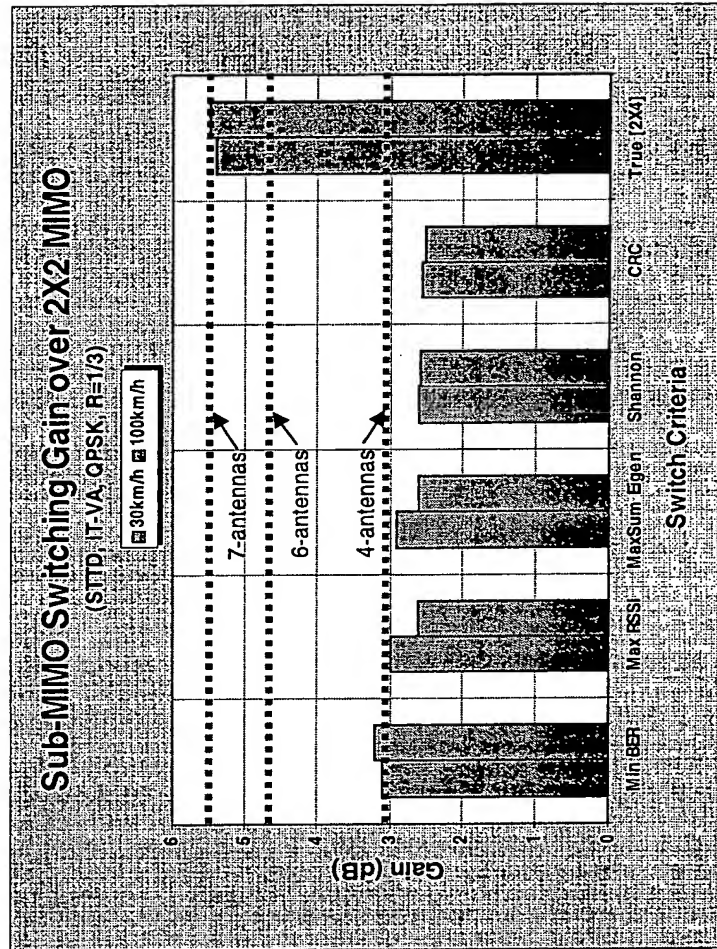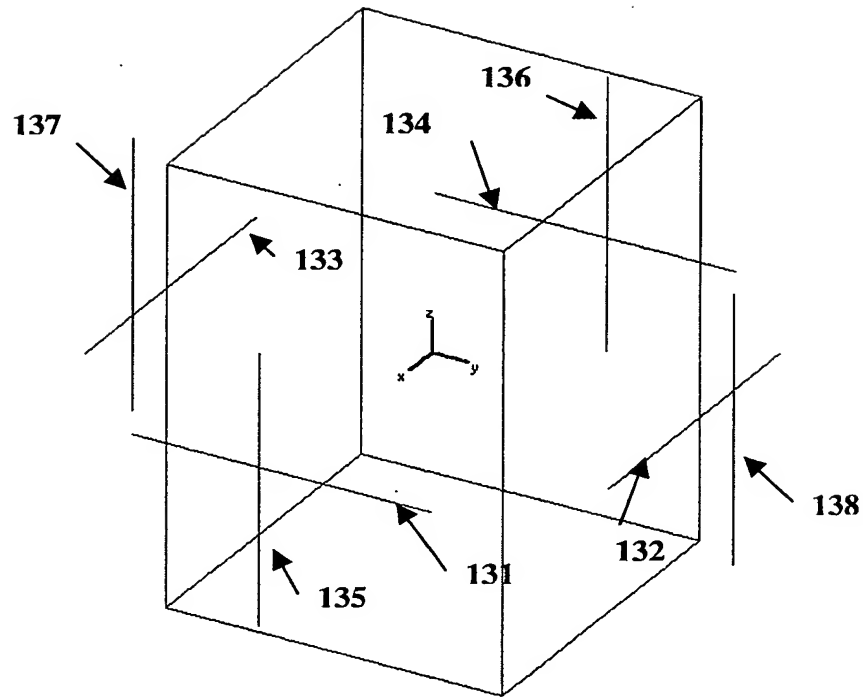
Figure 11

Figure 12

Figure 13
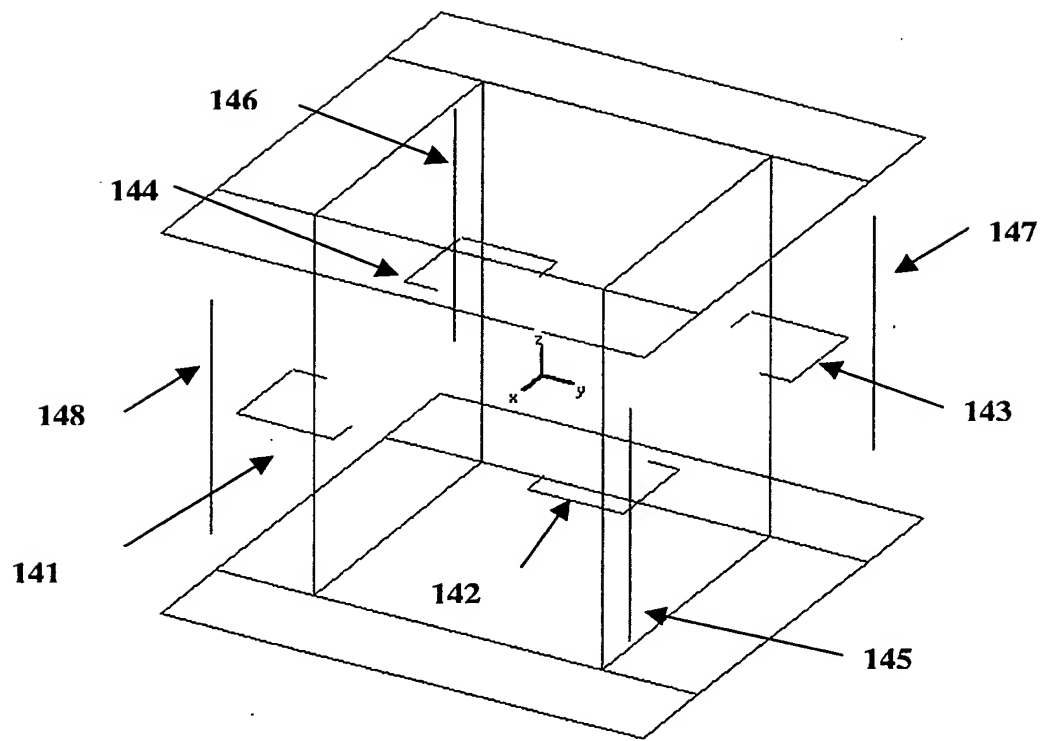
Figure 14

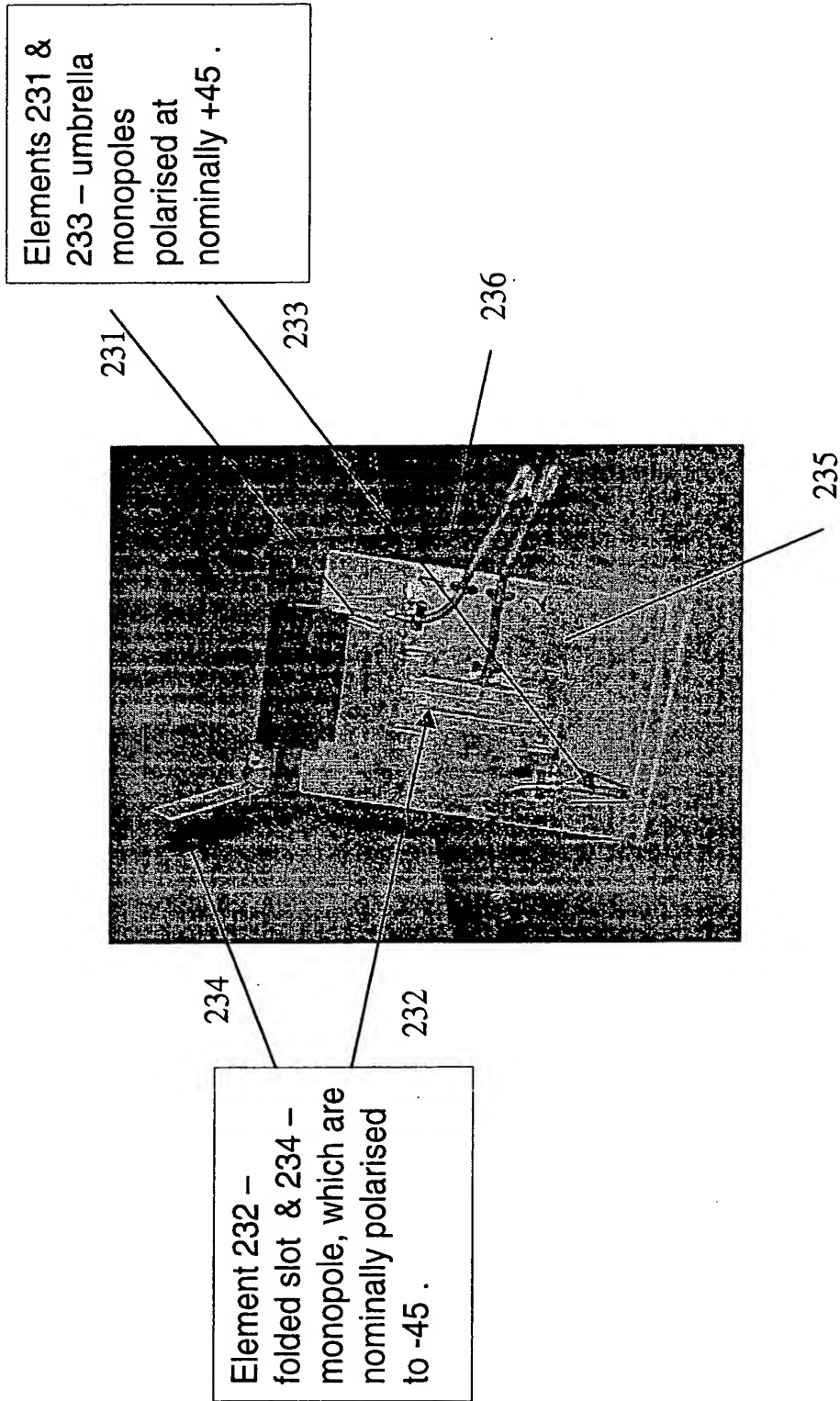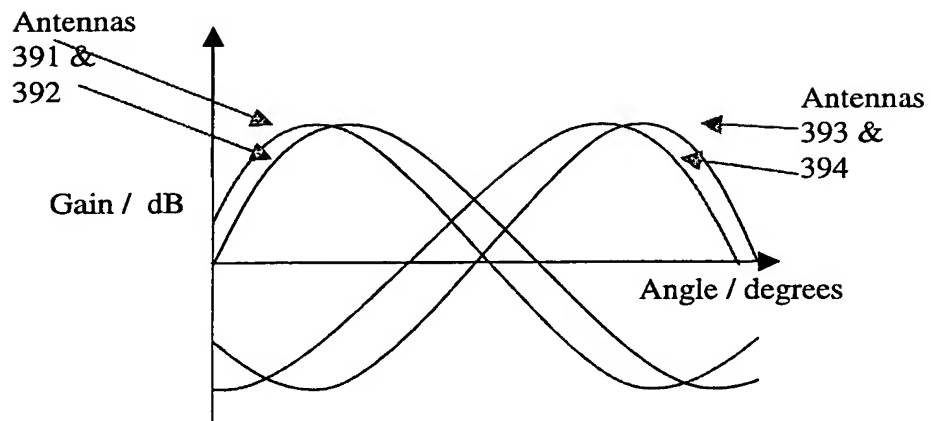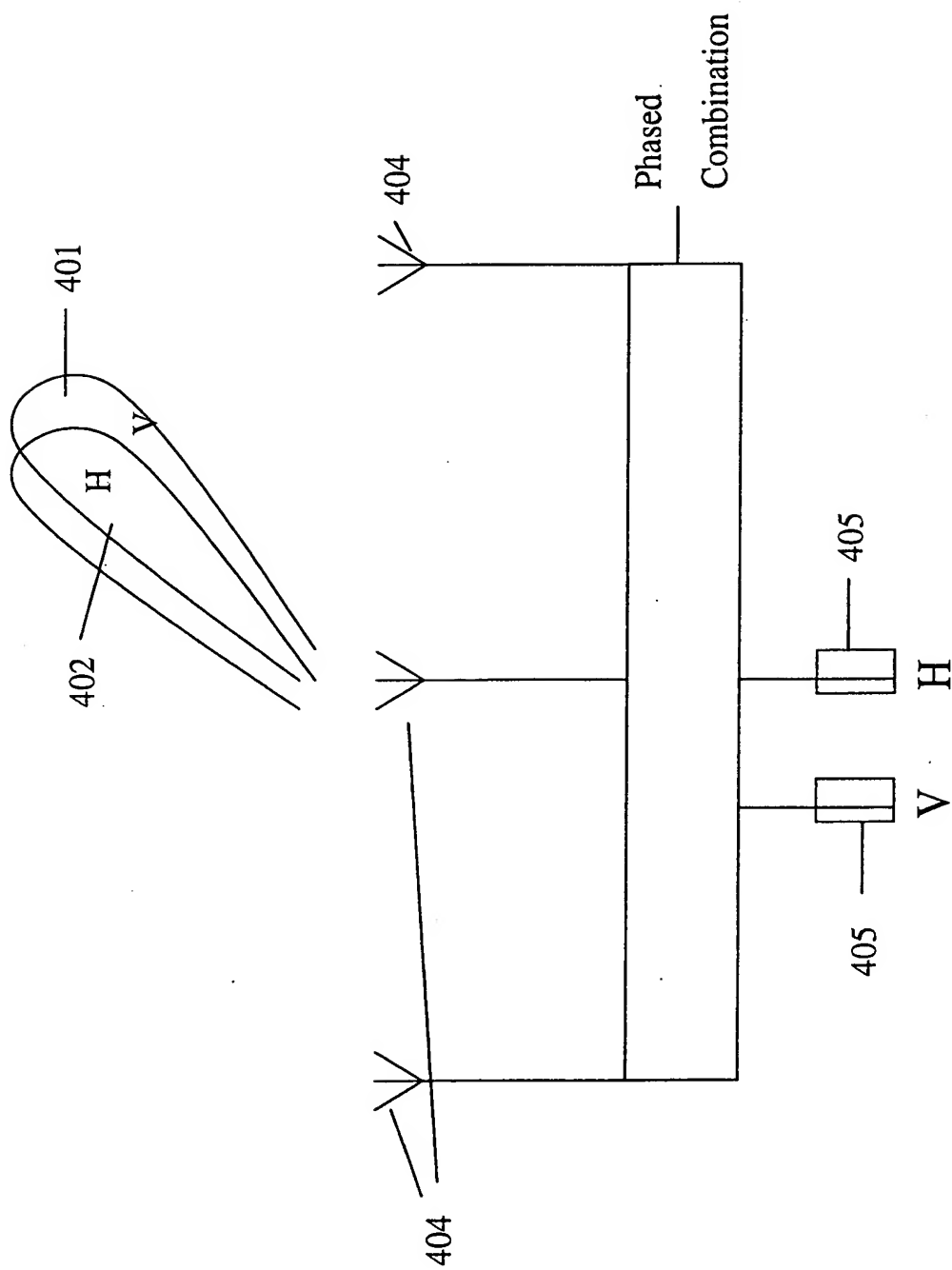|	Configuration 1		Configuration 2	
Average signal level (dB)	180°	4.6	180°	3.9
	90°	6.7	90°	4.8
Signal level spread (dB)	180°	1.4	180°	1.5
	90°	0.5	90°	0.3
Average standard deviation (dB)	180°	4.1	180°	1.7
	90°	1.4	90°	0.4
Lowest maximum achievable diversity gain (dB) (unit 0° orientation)	11.5		15	
Lowest maximum achievable diversity gain (dB) (unit 45° orientation)	14.5		14	

Figure 15

Elements 231 & 233 – umbrella monopoles polarised at nominally +45 .

231

233

236

235

234

232

Element 232 – folded slot & 234 – monopole, which are nominally polarised to -45 .

FIGURE 16

Antennas
391 &
392

Antennas
393 &
394

Gain / dB

Angle / degrees

Figure 17

FIGURE 18